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AUTHOR Entwisle, Doris R.; Greenberger, Ellen
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ABSTRACT

As part of a survey of cognitive style variables in Maryland ninth-graders, sense of control is measured by the Crandall scales for intellectual achievement responsibility. Feelings of control over success are greater than those over failure for both sexes. The results of this study disagree with previous work in four ways: (1) control beliefs do not predict school achievement; (2) middle class girls express lower feelings of control than comparable boys; (3) positive association between IQ and control is manifest only for boys; and (4) relationships between social class and control beliefs are the opposite of what has been found previously, with lower class students expressing higher control beliefs. Explanations for the divergent results are proposed. (Author)

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THE JOHNS HOPKINS UNIVERSITY
THE CENTER FOR THE STUDY OF SOCIAL ORGANIZATION OF SCHOOLS

A SURVEY OF COGNITIVE STYLE IN MARYLAND NINTH - GRADERS

III. FEELINGS OF CONTROL OVER ACADEMIC ACHIEVEMENT

BY

DORIS R. ENTWISLE
ELLEN GREENBERGER

AUGUST 1970

STAFF

John L. Holland, Director

James M. McPartland, Assistant Director

Virginia Bailey

Thelma Baldwin

Zahava D. Blum

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Doris R. Entwisle and Ellen Greenberger

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The Johns Hopkins University

Baltimore, Maryland

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ABSTRACT

As part of a survey of cognitive style variables in Maryland ninth-graders, sense of control is measured by the Crandall scales for intellectual achievement responsibility. Feelings of control over success are greater than those over failure for both sexes. The results of this study disagree with previous work in four ways: (1) control beliefs do not predict school achievement, (2) middle class girls express lower feelings of control than comparable boys, (3) positive association between IQ and control is manifest only for boys, and (4) relationships between social class and control beliefs are the opposite of what has been found previously, with lower class students expressing higher control beliefs. Explanations for the divergent results are proposed.

Sense of control, or feelings of efficacy, have figured prominently as both independent and dependent variables in recent sociological research. In adults, sense of control has been linked to occupational level and to educational attainment. In children, feelings of control have been linked to school achievement and to social class differences in educability. Most well-known, perhaps, is the finding that of all attitudinal, family background, and school variables measured in the Coleman (1966) survey, beliefs in control-of-destiny showed the strongest relation to achievement, with blacks and other minority groups expressing relatively low feelings of control. The present report, one of a series of reports on cognitive style variables in Maryland ninth graders, investigates feelings of academic control in relation to subcultural differences and in relation to academic achievement. Thus the focus is on a narrower conception of control than control-of-destiny as discussed in the Coleman report. Relationships of academic control with other cognitive style variables, as well as with achievement variables, are explored.

Perception of internal versus external control of reinforcement has been shown repeatedly to be a variable important to performance (Lefcourt, 1966).

Social learning theorists (cf. Rotter, 1954) assume that this is because a reinforcement acts to strengthen an expectancy that a particular behavior will be followed by the same reinforcement in the future. When the reinforcement is seen as not contingent on the subject's own behavior, its occurrence will not increase expectancy as much as when it is seen as contingent. Generalized expectancies about the relation between one's behavior and events that follow it suggest a "sense of control." The individual who has a strong belief that he can control his own destiny is likely to be more alert to those aspects of his environment which provide useful information for his future behavior. In addition, he will place a greater value on reinforcements for skill or achievement and be generally more concerned with his performance, particularly his failures (Rotter, 1966). Sense of control relates to amount of learning and also to what is learned over a broad age range; to mental disease (Cromwell, Rosenthal, Shakow and Kahn, 1961); to conformity (Crowne and Liverant, 1963); to risk-taking (Liverant and Scodel, 1960); to responses to frustration (Butterfeld, 1964); and to political activity (Bullough, 1967).

Scales developed to measure control beliefs have taken several forms. Some consist of a few

questions covering a wide range of situations (Coleman et.al., 1966). Others, derived from a clinical-psychological tradition, are far longer, and deal with the perceived internality vs. externality (I-E) of control over reinforcements. The best-known I-E scale for adults is that of Liverant, Rotter, Crowne, and Seeman (Rotter, et al., 1962). Several different I-E scales have been used with children (Locus of Control, Bailer, 1961; Children's Picture Test, Battle and Rotter, 1963; Intellectual Achievement Responsibility (IAR) Questionnaire, Crandall, Katkovsky, and Crandall, 1965). Since our primary interest lay in exploring cognitive style variables important for school achievement, we choose the IAR scale because it deals only with academic topics. The IAR scale contains 34 two-option items in which control over failure and control over success are separately measured. Pairs of questions allow the respondent to indicate I-E preference for both successes and failures. Two items, presented below, illustrate this property (such items do not appear consecutively on the test, of course).

"When you don't do well on a test at school is it

_____ a. because the test was especially hard, or

_____ b. because you didn't study for it."

"When you do well on a test at school is
it more likely to be

_____ a. because you studied for it, or

_____ b. because the test was especially easy?"

The questions all limit forces in the external environment to those persons most often in face-to-face contact with the child (parents, teachers, peers). The life-areas covered are limited to those of achievement in academic situations. The complete test is presented in Entwisle and Greenberger (1970a) and in Crandall, Katkovsky and Crandall (1965).

METHOD

The reader should consult Entwisle and Greenberger (1970a) for a complete description of how data were obtained. Only a brief review is given here.

The survey included ninth-graders in seven junior high schools in and around Baltimore, Maryland. Schools were selected to typify certain social class, racial, or residential segments of the U.S. population. The sample (see Figure 1 and Table 2, Entwisle and Greenberger, 1970a) was composed of inner-city blacks and whites (Schools 2 and 7), blue collar blacks and whites (Schools 3 and 6), rural whites (School 5), middle class whites (School 4), and middle class Jewish whites (School 1). Within schools, students were stratified on IQ (see Table 1, Entwisle and Greenberger, 1970a). Altogether, 312 boys and 352 girls took the Crandall (IAR) questionnaire.

The experimenters read the questions aloud over a public address system as students followed along on their own sheets. Testing assistants circulated among students as the scale was being administered to make sure students were completing it correctly. Other procedures were given to the same students before the Crandall scale. Entwisle and Greenberger (1970a) contains a description of the entire data-gathering procedure.

RESULTS

Characteristics of the Instrument.

Two sets of data on reliability of the Crandall (IAR) scale were collected. The first set (top of Table 1) suggests that homogeneity estimates for the two separate IAR scales (17 questions each) may be rather low for inner city and blue collar respondents.

The second set of data (bottom of Table 1) are test-retest correlations for 121 white middle class low-achievers collected as part of a subsequent study of school 4 in 1968-69. These test-retest correlations are low even though based on a sizeable N.

Our reliability data for students of average or above average ability from middle class backgrounds compare well with prior reports. For average ability ninth-graders, Crandall et al. (1965) report test-retest values of .65 for total score over a 2-month interval, and split-half estimates on the two subscales of .60 (N=130) Previous reports do not investigate test reliability for students below average in ability or achievement. The considerably lower reliability for such groups noted here suggests that the scales are less appropriate for lower status or lower achieving students.

There is not much data on the reliability of other control scales. However, these data which are available suggest that the Coleman items are more reliable for low-status respondents than the IAR scales. For 3 items of the Coleman Survey ("be someone else," "can do things well," "have no chance") Fennessey (1969) reports K-R 20 reliabilities as follows: .438 for the 2,952 6th-graders, combined races; and separately by race, .378 for the 1,593 white students, and .395 for the 1,359 black students. All were from the mid-Atlantic states. If the combined race estimate is stepped up to be appropriate for a 6-item scale (six items were used in the Coleman Survey) the value becomes .61.

It is not immediately apparent why a sense of control scale which is general in its coverage of life situations should be more reliable for low SES respondents than a scale which is limited to the school situation.

Survey Results, Seven Schools.

Means and standard deviations for the Crandall success and failure scales for all sub-groups are presented in Table 2. Correlations between the two scales for each subgroup are also given. The inter-scale correlations vary from one subgroup to another but are generally small and positive. Each of the two scales, as already described above, is

composed of 17 highly similar questions which determine whether control of events is perceived to be internal (by the child) or external (by teachers, parents, other children, the school). The situations depicted involve success or failure, for each of the two scales, respectively. Our findings of near independence of the two scales are consistent with earlier reports (Crandall et al., 1965).[1]

All the variance analyses (Tables 3, 4, 5, 6) point to between-scale differences, and Table 2 shows that generally the mean score on the success scale is higher than that on the failure scale (with high scores indicating greater internality). The largest mean difference is 2.4. Most differences are 1.0 or less. Between-scale differences vary in only a few instances with other variables: with sex (Table 5 only), with IQ and sex (Table 5 only), and with school (Table 6 only). In analyses of inner city and blue collar students there are no scale x sex interactions. For white students of medium and high IQ there are very small differences for boys, especially those of high IQ. High-IQ boys (one rural group and two middle class groups) are more prone to perceive themselves in control than are medium IQ boys, or than are girls of either IQ level. In fact medium IQ middle class girls show a small reversal over high IQ girls.

Sex differences are not significant for black students (Table 3). Sex differences elsewhere (Tables 5 and 6) plus the significant sex x school interaction (Table 6) indicate that sex is a significant source of variance mainly for whites of rural or middle class residential locus.

The differences by school are significant (Table 3, Table 6) but small. Surprisingly, inner city blacks exceed blue collar blacks on both success and failure scales, and both black groups are higher than all white groups where comparisons can be made holding IQ level constant (medium IQ). In no analysis is variance attributable to IQ significant, except for the scale x sex x IQ interaction noted earlier, where there is no difference associated with IQ for girls but a consistent difference for boys. In particular, IQ level is <u>not</u> a significant source of variance in Table 3 where results for black students of medium and low IQ are analyzed. There are no statistically significant between-school differences when only schools with white students are studied (Table 5) or when black and white schools are matched for IQ and social class level (Table 4). Consequently, the significant school differences (Table 6) across all average-IQ groups stem from urban vs. suburban contrasts, with urban students exhibiting greater internality.

Blacks and inner city whites who are of medium IQ have feelings of control similar to those of high-IQ suburban males. Conclusions to be drawn from Table 2 and the related variance analyses are that blacks feel themselves responsible for academic success to a greater degree than do whites, and that black boys of average or below average intelligence express feelings of control like those expressed by high-IQ whites. Differences among subgroups are most easily seen in Table 2.

Relations with Other Variables.

Relations between Crandall (IAR) scores and verbal productivity are discussed in the first report in this series (Entwisle and Greenberger, 1970a) and those between Crandall scores and test anxiety are discussed in the second report (Entwisle and Greenberger, 1970b). These relationships are negligible.

Relations with grades are summarized in Table 7. Eleven correlations (out of 184) are significant at or beyond the 5 percent level. All those that are significant for the failure scale (six) are negative and the other five, significant for the success scale, are positive. However, for the success scale, 33 out of 92 correlations (significant and nonsignificant),

are <u>negative</u> and for the failure scale 47 out of 92 correlations are positive, so there is not much consistency in the direction of relationships between control beliefs and grades. Overall, the association between Crandall scores and grades is unimpressive. The number of significant correlations (11 out of 184) is just about what one would expect by chance.

DISCUSSION

With few exceptions, in this survey feelings of control over success are greater than those over failure for both sexes. Differences between scales are larger for middle class boys than for middle class girls. The only other study with which these results can be directly compared (Crandall *et al.*, 1965) shows much smaller differences between scales (1 point or less for boys, and zero for girls). Also scores for medium-IQ students in the other survey are all 13 or better, a level seen only for high-IQ boys in our survey.

The low level of control expressed by average-IQ Jewish boys and rural boys is provocative, especially when weighed against the relatively high scores of inner city and blue collar blacks.

One explanation could be that average-IQ Jewish boys are *relatively* lower with respect to their peers than other average-IQ boys. To be specific, IQ scores for Jews are generally higher than means for other white groups (see Held, 1941), so these Jewish boys, selected to have IQ's around 100, may perceive themselves to be much less competent than the other boys in their school, where the group average is probably 110 or better. What is "average" for the total population may be "low" for this subgroup.

The low level for rural boys is harder to explain. An initial hypothesis of this study was that rural boys and inner city boys, who both achieve below average in school, would differ in sense of control. The thought was that the alienation characterizing inner city blacks would not be characteristic of rural white boys, and indeed that work experience such as farming that is related to control over the environment would enhance feelings of control in rural boys. The data suggest, however, that rural boys are particularly low in feelings of academic control, and inner city boys are high. The pattern of results is puzzling. Perhaps rural boys, who are more highly socialized and more disciplined by parents and teachers, see adults as being in control. Inner city boys, on the other hand, who establish independence from their parents earlier, learn that success "on-the streets" is determined by their own abilities. This same rationale may explain why middle class girls are lower than boys as noted below.

The results of this survey differ in four important respects from results of previous research on children's control beliefs: (1) control beliefs do not predict school achievement; (2) middle class girls express lower feelings of control than middle class boys, (3) a positive association between IQ and control

is manifest only for boys; (4) relationships between control beliefs and social class are the opposite of what has been seen previously. These findings will be discussed in turn.

School Achievement Prediction.

The relations in this survey between report-card grades and IAR scores are negligible. This finding is inconsistent with previous reports. Earlier Crandall et al. (1965) found lower relationships between IAR scores and report-card grades for children in grades 6, 8, 10, and 12 than for children in grades 3, 4, 5. They did, however, find significant correlations in the .20's and .30's (IQ uncontrolled) for the older children. Also, as mentioned in the introduction, Coleman found control beliefs a good predictor of school achievement, better than any other variable in the survey. Our findings also differ from his.

A number of points are relevant to the interpretation of these disagreements. In our survey, school achievement is measured by grades in four major subjects, English, social studies, mathematics, and science. To pool results from several schools produces misleading results, however, unless the ability distribution is the same from school to school, because

there is a noticeable relation between control beliefs and IQ level within school. Students of higher IQ levels show higher control beliefs (except for white girls). The relation between IQ and control beliefs is especially strong for white boys. Since IQ is strongly correlated with school achievement, when IQ is not controlled a correlation between control beliefs and achievement will emerge. This may explain the divergence between our data (IQ controlled) and other data (IQ uncontrolled), especially the data of the Coleman survey.[2] Whether further variance in school achievement beyond that explained by IQ can be explained by control beliefs is not clear from the present data. The reliability of the Crandall scales is low enough for most subgroups in this sample so that correlational studies within subgroups of the sample probably have small chance of detecting relationships.

Sex Differences.

Quite generally, girls have expressed higher control beliefs than boys (Crandall et al., 1965; Coleman et al., 1966; Boocock et al., 1967). We find no significant difference between black girls and boys. We do find significant sex differences for rural and middle class whites, but the difference is a complex

interaction between scale, sex, and IQ. For the white girls, there is no relation, or even a slight reversal, between IQ level and control scores. Boys, besides being more inclined to attribute their success to their own efforts and their failures to external causes, show strong relations between IQ level and control scores.

The present analysis may detect more complex differences than other surveys because of its more elaborate design. When scores for whites on the two scales are summed and no notice is taken of differential feelings of control over success and failures or of IQ differences, sex differences appear. Girls then tend to exceed boys, in agreement with previous reports: 24.7 vs. 24.6 for middle class whites, 24.7 vs. 23.0 for middle class Jewish whites, 24.4 vs. 22.4 for rural whites. There is a noticeable trend for girls to score higher on the failure scale (10 of 13 comparisons across subgroups). Thus their higher control score may signify a greater willingness to assume responsibility for academic failure or greater guilt about failure. A similar finding appears also in the Crandall et al. data (see their Table 2, p. 100). Naturally, the finding needs replication and further study, but it may be an important one in understanding the genesis of control beliefs and in designing interventions to alter control beliefs.

Social Class.

The relationship between control beliefs and social class found here is at odds with previous reports. With a fairly narrow SES range, Crandall et al. (1965) find low but positive correlations (.14 to .17) between SES and I-E scores. Other studies (Coleman et al., 1966; Battle and Rotter, 1963) also note a positive relation with social class. We find differences only when IQ is held constant, and then control and social class are inversely related. This raises a number of questions.

First, it is important to note that "intellectual achievement responsibility" is a different variable from more general control beliefs, and previous research on social class differences has been confined to the latter. As one component in feelings of helplessness with respect to the environment, feelings of helplessness about academic pursuits may play a role. But many (Katz, 1967) have called attention to the irrelevance of academic goals for black and other disadvantaged groups. The lower reliability of the IAR scales that we note for such groups may be one manifestation of such irrelevance.

Some data are available on the possible wide divergence between the control beliefs sampled in the Coleman survey and the attitudes tapped by the Crandall IAR scales (Boocock, Schild, and Stoll, 1967).

For Baltimore 10th and 11th-graders, correlations between the individual Coleman questions and the IAR scales range from -.36 to +.20. Four of the 12 correlations are negative and most are close to zero. The Coleman questions generally correlate positively with one another, and as noted earlier, this 6-item scale is probably considerably more reliable for lower status or lower achieving students than the IAR scales. Unfortunately, the Boocock et al. data generally do not agree with the Coleman survey data as far as relation between control beliefs and race, status, and sex are concerned, and no data relating Crandall IAR scores to social class are reported by Boocock et al. The best conclusion seems to be that the Crandall scales and Coleman items are unrelated, and so perhaps the divergence in findings based on these measures is to be expected.

A further question can be raised, however, about the relation between the control dimension and intelligence. Several studies, including the present one, indicate that intelligence is positively related to internality of control (Bailer, 1961; Crandall, Katkovsky and Preston, 1962; Coleman et al., 1966; Bartel, 1970). Is sense of control then merely a response to one's own intelligence? This is a hard question to answer. Lefcourt (1966) argues against this, saying that "in studies of intelligence where

the range of intelligence is restricted, little relationship has been found between intelligence and control measures" (studies are not cited). This seems a strange argument, for one would expect on statistical grounds that relationships would be attenuated by a restriction in range on either variable. In our view there is not yet much evidence that control is a different construct from intelligence except for consistent findings of sex differences. Reversals by social class (Battle and Rotter, 1963) where lower class blacks with "high IQ's" show lower control than middle class whites with "average IQ's" are not well substantiated at present. To be specific, "high IQ" and "average IQ" are not defined in terms of reference groups. In view of the well-known disparity between intelligence distributions of blacks and whites, the IQ levels reported may not define groups where blacks are higher than the whites they are compared with. More work is required to see how powerful the "control" effect is as an explanatory variable when intelligence is controlled for.

There is a third question that can be raised about the high internality expressed by blacks in this survey. It concerns the interpretation of the Crandall items. The items include a number that could tap guilt feelings. For example, there is the question:

"When you don't do well on a test at school is it a) because the test was especially hard or b) because you didn't study for it?" "Study for it" can cover a wide set of activities but if the respondent has a high level of guilt it seems that choosing alternative (b) could signify guilt over "not studying enough"--guilt, just as well as internality of control. Many of the Crandall items are interpretable in these terms.

One of the most troublesome things about using questionnaires with different subgroups is the change in question meanings that occurs across subgroups. If, however, blacks are higher in attributing blame to the self, many of the questions could tap guilt rather than internality. The pattern of sex differences, already pointed out, also suggests that guilt may be a second factor in the Crandall scale.

To sum up: social class differences in control beliefs concerning <u>academic reinforcement</u> are not clear-cut in this report or in the literature generally. There is reason to doubt the suitability of the IAR scale for use with lower status or low achieving respondents.

<u>Conclusions.</u>

Altogether the pattern of results seen here seems to raise more questions than it answers. There

is some doubt raised as to the suitability of the IAR scales for lower status or low achieving students of junior high school age. The 6-item Coleman scale seems preferable for such groups, both in terms of its probably higher reliability and also in terms of the relevance of the life issues it concerns. The Crandall scale may be appropriate for middle class or white children, but work is needed to determine how much variance, beyond that attributable to IQ, can be explained by IAR scores. Both the present analysis and earlier work (Entwisle and Greenberger, 1970b) suggest that comparisons across schools where IQ distributions within schools are different may produce spurious "social class" differences. If the data in this survey had not been stratified by IQ, the blue collar vs. middle class comparisons would no doubt have shown middle class respondents to be higher in feelings of control, yet average IQ children in middle class schools generally have lower feelings of control than low IQ black students in blue collar areas. This suggests that IQ rather than social class is responsible for findings in other surveys, which did not control for IQ.

FOOTNOTES

1. On an abbreviated version with 10 items for each scale, Boocock, Schild, and Stoll (1967) find an inter-scale correlation of -.28 (N=237). This report diverges from most others, and some peculiarities in its sample, which contains both whites and blacks, may account for this finding.

2. In fact most of the "achievement measures" in the Coleman survey can be taken as "ability" measures. The correlation between control beliefs and "achievement" found by Coleman, therefore, can be interpreted as a correlation between control beliefs and ability, exactly as is noted here.

Table 1. Reliabilities for Crandall (IAR) Questionnaire

Kuder-Richardson (20) Reliabilities For Some Subsample Groups
(9th Grade Survey, 1968)

		n[a]	Crandall Success	Crandall Failure	Crandall Total	Correlation Between Success and Failure Scales
Middle Class (Jewish)	Med IQ	55	.55	.58	.63	.19
Middle Class (Jewish)	Hi IQ	54	.59	.63	.70	.19
Blue Collar (White)	Med IQ	60	.52	.44	.44	-.05
Blue Collar (White)	Hi IQ	49	.38	.59	.57	.18
Inner City (Black)	Med IQ	67	.54	.44	.57	.22
Inner City (Black)	Low IQ	60	.44	.30	.54	.36

[a]Some Ss (School 1) were later eliminated from the ninth-grade survey for reasons unconnected with the Crandall IAR results. They are included here.

[b]"Average IQ" students have IQ's (mostly CTMM) in the range 95 to 114 or SCAT scores between 39th and 60th percentile on national norms.
"Low IQ" students have IQ's in the range 70-85.
"High IQ" students have IQ's in the range 128-up or SCAT scores above 92nd percentile on national norms.

Test-Retest Correlations for Low Achievers in 7th, 8th, 9th Grades
(Fall 1968 vs. Spring 1969), N=121

Success Scale	.44
Failure Scale	.32

Table 2. Mean Scores by Subgroups for Crandall Success and Crandall Failure Scales (Academic Control).

			Boys						Girls					
				Success		Failure				Success		Failure		
			n	M.	S.D.	M.	S.D.	Correlations S-F Scales	n	M.	S.D.	M.	S.D.	Correlations S-F Scales
Inner City	Black	LoIQ	30	13.5	2.12	12.4	1.58	.36	30	13.3	1.89	12.1	2.36	.38
		MedIQ	29	13.1	1.88	12.0	1.72	.27	41	13.9	1.97	12.2	2.50	.21
	White	MedIQ	16	11.9	3.06	10.4	3.50	.46	16	14.1	1.78	12.1	2.25	.19
Blue Collar	Black	LoIQ	23	12.5	2.59	11.7	2.51	.37	22	12.3	2.47	10.9	3.13	.37
		MedIQ	26	13.5	1.33	11.3	2.24	.02	30	13.3	1.63	11.3	2.14	.37
	White	MedIQ	30	12.1	2.73	11.6	2.28	-.10	30	12.7	1.86	12.1	2.39	.16
		HiIQ	19	12.4	2.09	11.6	3.07	.24	30	13.2	1.83	12.4	2.17	.06
Rural	White	MedIQ	29	10.2	3.12	10.3	2.64	.31	27	12.8	2.71	11.6	2.94	.24
		HiIQ	20	13.2	2.30	11.1	2.77	-.29	30	12.2	2.60	12.2	2.84	.34
Middle Class	White	MedIQ	22	12.6	2.13	12.1	3.14	.23	20	12.2	2.40	12.7	2.20	.32
		HiIQ	30	13.1	2.41	11.4	3.28	.26	30	11.8	2.18	12.6	2.37	.13
Middle Class Jewish	White	MedIQ	20	11.8	2.88	10.6	3.95	-.16	30	12.9	2.37	12.2	2.27	.38
		HiIQ	18	13.0	2.32	10.6	4.03	.42	16	12.6	1.96	11.8	2.08	.07
Average								.18						.25

Table 3. Variance Analysis for Crandall (IAR) Success and Failure Scales. (Black Inner City vs. Black Blue Collar; Low vs. Medium IQ).

Source of Variation	d.f.	F-Value
Between Subjects	230	
IQ	1	1.73
Sex	1	0.18
Social Class (school)	1	12.10**
IQ x Sex	1	1.89
IQ x Social Class	1	1.50
Sex x Social Class	1	1.14
IQ x Sex x Social Class	1	
Subjects within Groups. (Mean Square = 4.77)	223	
Within Subjects	231	
Between Scales	1	49.87**
Scales x IQ	1	2.02
Scales x Sex	1	0.57
Scales x Social Class	1	0.77
Scales x IQ x Sex	1	0.03
Scales x IQ x Social Class	1	0.74
Scales x Sex x Social Class	1	0.04
Scales x IQ x Sex x Social Class	1	0.68
Scales x Subjects Within Groups (Mean Square = 4.54)	223	

** $P(F) < .01$

Table 4. Variance Analysis for Crandall (IAR) Success and Failure Scales. (Inner City vs. Blue Collar; Black vs. White, Medium IQ).

Source of Variation	d.f.	F-Value
Between Subjects	217	
Sex	1	2.55
Between School	1	0.03
Between Race	1	0.01
Sex x School	1	1.73
Sex x Race	1	0.05
School x Race	1	0.10
Sex x School x Race	1	0.13
Subjects within Groups (Mean Square = 6.68)	210	
Within Subjects	218	
Scales	1	3.38[a]
Scales x Sex	1	0.67
Scales x School	1	0.17
Scales x Race	1	0.33
Scales x Sex x School	1	0.70
Scales x Sex x Race	1	0.33
Scales x School x Race	1	0.13
Scales x Sex x School x Race	1	0.48
Scales x Subjects Within Groups (Mean Square = 4.59)	210	

[a] $.05 < P(F_{1,200}) < .10$

Table 5. Variance Analysis for Crandall (IAR) Success and Failure Scales. (Blue Collar, Rural, White Middle Class; Medium and High IQ).

Source of Variation	d.f.	F-Value
Between Subjects	400	
IQ	1	2.18
Sex	1	10.01**
Between School	3	2.13
IQ x Sex	1	2.74
IQ x School	3	1.61
Sex x School	3	1.11
IQ x Sex x School	3	1.41
Subjects within Groups (Mean Square = 7.99)	385	
Within Subjects	401	
Scales	1	18.48**
Scales x IQ	1	2.07
Scales x Sex	1	4.90*
Scales x School	3	1.44
Scales x IQ x Sex	1	5.06*
Scales x IQ x School	3	0.08
Scales x Sex x School	3	1.41
Scales x IQ x Sex s School	3	1.08
Scales x Subjects Within Groups (Mean Square = 5.62)	385	

* $P(F) < .05$
** $P(F) < .01$

Table 6. Variance Analysis for Crandall (IAR) Success and Failure Scales. (Average IQ, Black and White Inner City; Black and White Blue Collar; Rural White; Jewish and Non-Jewish Middle Class White).

Source of Variation	d.f.	F-Value
Between Subjects	365	
Sex	1	17.18**
School	6	33.94**
Sex x School	6	2.65*
Subjects within Groups (Mean Square = 7.37)	352	
Within Subjects	366	
Scales	1	32.43**
Scales x Sex	1	0.03
Scales x School	6	2.10***
Scales x Sex x School	6	0.92
Scales x Subjects Within Groups (Mean Square = 5.06)	352	

* $P(F) < .05$
** $P(F) < .01$
*** $P(F) \doteq .05$

Table 7a. Girls. Correlations between Crandall Success and Failure Scales and Course Grades (English, Social Studies, Mathematics, and Science).

				Crandall Success Scale				Crandall Failure Scale			
			n	Eng.	S.S.	Math.	Sci.	Eng.	S.S.	Math.	Sci.
Inner City	Black	LoIQ	30	-.16	-.20	-.02	-.08	.06	.16	.22	.15
		MedIQ	41	.28	-.02			-.01	-.28		
	White	MedIQ	16	-.11	-.16	-.03	.12	.21	.30	.28	-.04
Blue Collar	Black	LoIQ	22	.27	.11	.58*	.26	-.23	-.16	.05	-.24
		MedIQ	30	.13	.07	.03	-.15	.30	-.07	.15	-.34
	White	MedIQ	30	-.34	-.16	.00	-.18	.09	-.23	.17	.04
		HiIQ	30	.36*	.36*	.31	.10	-.25	-.35	-.35	-.42*
Rural	White	MedIQ	27	-.06	.16	.09	.10	-.33	.26	.03	-.01
		HiIQ	30	.00	.14	.14	.22	.11	.14	.04	.33
Middle Class	White	MedIQ	20	.01	.04	.16	-.06	.08	.28	.23	.11
		HiIQ	30	.05	.28	-.04	.05	-.06	.27	-.25	.22
Middle Class Jewish	White	MedIQ	30	.26	.12			.26	.37*		
		HiIQ	16	.20	.29			.24	.08		

*Significant at or beyond the 5 percent level, two-sided.

Table 7b. Boys. Correlations between Crandall Success and Failure Scales and Course Grades (English, Social Studies, Mathematics, and Science).

				Crandall Success Scale				Crandall Failure Scale			
			n	Eng.	S.S.	Math.	Sci.	Eng.	S.S.	Math.	Sci.
Inner City	Black	LoIQ	30	.15	-.18	.01	.13	-.37*	-.36*	-.41*	-.32
		MedIQ	29	.18	.05			-.39*	-.14		
	White	MedIQ	16	.42	.35	.38	-.07	.04	.23	-.14	-.25
Blue Collar	Black	LoIQ	23	.19	.01	.02	-.05	.00	-.02	-.02	-.06
		MedIQ	26	-.08	.12	-.20	-.08	.17	.20	.07	.13
	White	MedIQ	30	-.04	-.15	-.07	-.10	-.12	-.02	-.14	-.03
		HiIQ	19	.35	.21	.17	.06	-.07	-.22	-.20	-.49*
Rural	White	MedIQ	29	-.06	.02	-.06	.10	-.36	-.13	-.11	-.02
		HiIQ	20	-.11	-.08	-.16	.05	-.12	-.22	-.08	-.30
Middle Class	White	MedIQ	22	.24	.19	.10	-.25	.03	-.13	.13	-.24
		HiIQ	30	.03	-.15	-.11	-.03	.07	-.13	.06	.09
Middle Class Jewish	White	MedIQ	20	.10	.50*			.32	-.01		
		HiIQ	18	.25	.30			.27	.42		

*Significant at or beyond the 5 percent level, two-sided.

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